



University of Saskatchewan
Department of Electrical Eng
EE 212
Mid-term Exam

Instructor: R. Karki

Feb 14, 2003

Note: All the equations carry equal marks.

1. Calculate the voltage across the 1Ω resistor in Figure 1.

$$6.67 \angle 0^\circ V$$

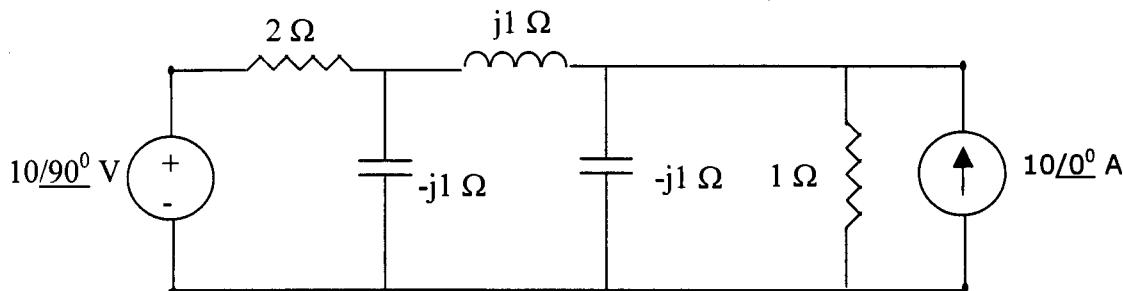


Figure 1

2. Find the instantaneous current through the 10Ω resistor in Figure 2 when the instantaneous current from the current source is 10 Amps?

where:

$$i(t) = 10 \sin(\omega t + 90^\circ) \text{ amps}$$

$$v(t) = 90 \sin \omega t$$

and both the sources are at 60 Hz frequency.

$$0.5 A$$

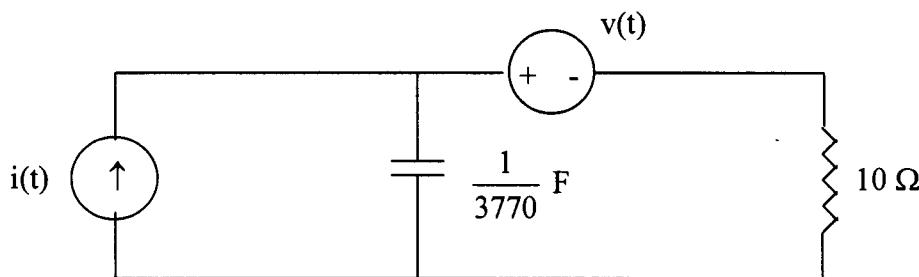


Figure 2

3. A 50 kVA transformer supplies a 20 kW heating load at unity power factor. How much additional inductive load at 0.8 power factor can the transformer carry?

$$26.0309 + j 19.5232 \text{ VA}$$

4. Find the RMS value of the current through the 10Ω resistor in Figure 3. The current waveform from the source can be expressed as:

$$i(t) = 10 + 100 \sin \omega t$$

where ω is equal to the resonant angular frequency of the circuit in Figure 3.

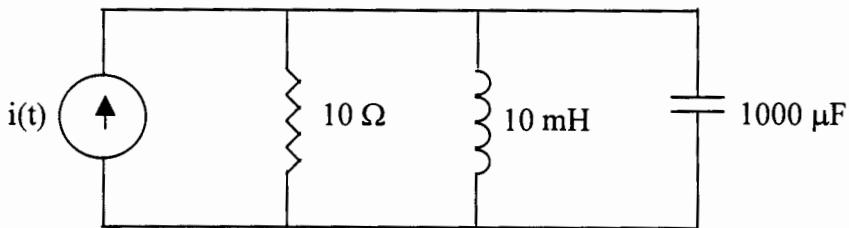


Figure 3

$$I_{RMS} = 70.71 \text{ A}$$

The end.